

CLAIMS

What is claimed is:

1. A cooking apparatus comprising:
a cooking cavity;
at least one pair of support rails respectively included at both side walls of the cooking cavity;
a tray on which food is placed;
a heater to directly heat the tray to cook the food by activation of the heater, having a pair of terminals; and
at least one socket included at a rear wall of the cooking cavity allowing electric power to be supplied to the heater when connected to the terminals.
2. The cooking apparatus as set forth in claim 1, wherein the heater comprises:
a conductive film coated on a lower surface of the tray; and
first and second opposing electrodes connected to the conductive film, the conductive film heating as a result of electric current flowing through the conductive film between the first and second electrodes.
3. The cooking apparatus as set forth in claim 2, wherein each of the first and second electrodes is divided at a center portion thereof, the divided electrode segments spaced from each other by a distance with a conductive wire connected therebetween to prevent a center area of the conductive film from being heated more than peripheral area thereof.
4. The cooking apparatus as set forth in claim 2, wherein each of the first and second electrodes is arch shaped, to prevent a center area of the conductive film from being heated more than a peripheral area thereof.
5. The cooking apparatus as set forth in claim 2, wherein
the pair of terminals are positioned at a side of the tray such that inner ends of the terminals are connected to the first and second electrodes and outer ends of the terminals are outwardly projected from the tray, and

when the tray is pushed into the cooking cavity along the support rails, the pair of terminals are inserted into the socket corresponding to the support rails to allow the tray to be heated by electric current flowing through the conductive film between the first and second electrodes.

6. The cooking apparatus as set forth in claim 5, wherein the lower surface of the tray is covered with a cover plate so as to prevent the heater attached to the tray from being exposed.

7. The cooking apparatus as set forth in claim 6, wherein each of the pair of terminals, except the outer end, is surrounded with an insulating sheath, and the lower surfaces of the tray and the cover plate include a pair of grooves, respectively, to define a pair of holes, in which the pair of terminals are received.

8. The cooking apparatus as set forth in claim 7, wherein sealing material is applied to the grooves of the tray and the cover plate to prevent moisture from infiltrating into the heater.

9. The cooking apparatus as set forth in claim 2, wherein:
the at least one pair of support rails include a plurality of pairs of support rails, which are positioned at both side walls of the cooking cavity to be vertically spaced from one another by a distance, and
the at least one socket includes a plurality of sockets, which are positioned at the rear wall of the cooking cavity to correspond to the positions of the plurality of pairs of support rails.

10. The cooking apparatus as set forth in claim 9, further comprising an upper heater fixed to an upper portion of the rear wall of the cooking cavity to cook food in cooperation with the heater provided at the tray.

11. The cooking apparatus as set forth in claim 9, wherein each of the plurality of sockets includes a micro switch, which is turned on and off when the terminals are inserted into and separated from a corresponding one of the sockets, so as to control electric current supplied to the heater by registering which of the sockets the heater is inserted into.

12. The cooking apparatus as set forth in claim 1, wherein the tray includes a bottom plate and a side wall upwardly extended from a peripheral edge of the bottom plate, and the heater is positioned on a lower surface of the bottom plate.

13. The cooking apparatus as set forth in claim 12, further comprising a grill plate placed on an upper end of the tray, wherein the side wall of the tray includes a stepped portion at a predetermined height of an inner surface thereof, wherein when the heater is activated and the tray is filled with water steam cooks the food.

14. A cooking apparatus, comprising:
a substantially rectangular cooking space;
a heating element having a pair of terminals;
a heating system including a socket at a certain position within the cooking space corresponding to a desired cooking position, the socket cooperable with the pair of terminals to provide power to the heating element; and
a support system which supports the heating element in a position corresponding to the position of the socket.

15. The cooking apparatus as set forth in claim 14, wherein the heating element comprises a conductive film coating a lower surface of the heating element such that the heating element is directly attached to the tray to permit the tray to generate heat by itself to cook food placed thereon.

16. The cooking apparatus as set forth in claim 15, wherein the heating element comprises first and second electrodes connected to the conductive film.

17. The cooking apparatus element as set forth in claim 16, wherein the first and second electrodes oppose each other.

18. The cooking apparatus element as set forth in claim 17, wherein electric current flowing through the conductive film between the first and second electrodes heats the conductive film.

19. The cooking apparatus element as set forth in claim 16, wherein each of the first and second electrodes is divided at a center portion.

20. The cooking apparatus element as set forth in claim 19, wherein the divided electrode segments are set apart and include a conductive wire connected therebetween.

21. The cooking apparatus element as set forth in claim 16, wherein each of the first and second electrodes is bent outward to have an arched shape.

22. The cooking apparatus element as set forth in claim 16, wherein inner ends of the terminals are connected to the first and second electrodes, respectively, and outer ends of the terminals project outwardly.

23. The cooking apparatus element as set forth in claim 22, wherein when the heating element is supported by the support system, the terminals cooperate with the socket to power the conductive film.

24. The cooking apparatus as set forth in claim 23, wherein the terminals, except for the outer end of the terminals, are surrounded with insulating sheaths.

25. The cooking apparatus as set forth in claim 24, further comprising:
a pair of semi-circular grooves in positions in the lower surface of the heating element;
and

a cover plate covering a lower surface of the heating element, wherein the cover plate includes a pair of semi-circular grooves in position corresponding to the positions of the grooves in the lower surface of the heating element, wherein the grooves in the lower surface of the heating element and the grooves in the cover plate receive the insulating sheaths.

26. The cooking apparatus as set forth in claim 25, further comprising a sealing material applied to the grooves in the lower surface of the heating element and the grooves in the cover plate to prevent moisture from infiltrating into the heater.

27. The cooking apparatus as set forth in claim 14, wherein the support system comprises a plurality of pairs of support rails vertically spaced from one another by a distance.

28. The cooking apparatus as set forth in claim 27, wherein the socket is plural in number and positions of the sockets correspond to vertical positions of the support rails.

29. The cooking apparatus as set forth in claim 28, further comprising an upper heater fixed to an upper portion of a rear wall of the rectangular cooking space.

30. The cooking apparatus as set forth in claim 28, wherein the sockets comprise micro switches turning on when the sockets cooperate with the terminals, and off when the sockets do not cooperate with the terminals.

31. The cooking apparatus as set forth in claim 14, wherein the heating element comprises:

a bottom plate and a side wall upwardly extended from a peripheral edge of the bottom plate, and

a conductive film on a lower surface of the bottom plate.

32. The cooking apparatus as set forth in claim 31, wherein the heating element comprises a grill plate on an upper surface of the heating element, wherein the side wall of the tray includes a stepped portion at a predetermined height of its inner surface, wherein when the heating element is activated and having food placed on the grill plate, steam generated from the water contained in the tray cooks the food.